COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Tidewater Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

USA Waste of Virginia Landfills, Inc.
Bethel Landfill, Hampton, Virginia
Permit No. **TRO – 61291**
AFS Id. No. : 51-650-00093

Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, USA Waste of Virginia Landfills, Inc. has applied for a Title V Operating Permit for its Hampton facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact:_____ Date: April 3, 2008

Air Permit Manager:_____ Date: April 3, 2008

Deputy Regional Director:_____ Date: April 3, 2008

FACILITY INFORMATION

Permittee

USA Waste of Virginia Landfills, Inc.
100 North Park Lane
Hampton, Virginia 23666

Facility

Bethel Landfill
0.1 mile west of Bethel Road, north of I-64
Hampton, Virginia 23669

Responsible Official

Mr. Douglass Whitehead, Director of Landfill Operations
100 North Park Lane
Hampton, Virginia 23666

Facility Contact

Mr. Jim Loveland
Market Area Engineer
Phone: 757-766-3033
Fax: 757-766-9166

ID No. 51-650-00093

SOURCE DESCRIPTION

Overall Process Description

The main process occurring at the Bethel Landfill is the sanitary landfilling of non-hazardous solid waste. Landfill gas is collected by an active gas extraction system and sent to a landfill gas-to-energy plant. An enclosed flare and an open (utility) flare are available for supplemental control and back-up capacity. Each process is described in greater detail in the following sections.

Landfill

A sanitary landfill consists of an area of land which has been permitted under solid waste regulations for construction and to accept waste materials. Waste is hauled in trucks along paved and gravel roads. The truck traffic on these roads is a source of fugitive dust emissions. Waste acceptance occurs during the landfill's operating hours.

The trucks dispose of the refuse at the landfill's "active" face, the location of which can vary from day to day. The refuse is spread into lifts (or layers) and is subsequently compacted by landfill equipment. At the end of the day, soil or other approved alternative daily cover (ADC material) is spread over the waste to minimize odors and reduce the occurrence of vectors (flies, birds, etc.).

Complex microbial and biochemical reactions occur within the landfill's interior after the waste has been deposited for a period of time. Initial decomposition of the waste is rapid and continues until the entrained oxygen within the refuse is depleted. The second stage of refuse decomposition is anaerobic, and can be divided into two separate and independent processes: non-methanogenic and methanogenic. Carbon dioxide (CO2) is a byproduct of the non-methanogenic process and methane (CH4) is a byproduct of the methanogenic process. These two compounds are the primary constituents of landfill gas; CO2 content can range from 40% to 50% and CH4 can range from 50% to 60%. The production of landfill gas is a continuous process. It begins months after the initial waste placement and continues until the microbial reactions are limited by substrate or moisture availability.

Landfill gas production volumes are affected by the rate at which the solid waste is disposed in the landfill. Gas production volumes vary over the life of the landfill but generally increase from year to year until a peak volume is reached shortly after landfill closure. Other factors influencing production include climate (i.e., precipitation), overall moisture conditions within the landfill, types of solid waste accepted (degradable vs. inert), etc. The landfill gas picks up other minor constituents as it travels through the refuse. These include hydrogen sulfide, which can range from zero to several hundred ppm, and volatile organic compounds (VOC), which ranges from several hundred to several thousand ppm. Some of the VOC encountered in the landfill are classified as Hazardous Air Pollutants (HAPs).

Landfill gas is collected or "captured" from the interior of the landfill by a series of vertical extraction wells which are embedded in the landfill volume at various depths. Some extraction devices can be in the form of horizontal extraction trenches. The extraction wells or trenches are connected to header pipes that send the landfill gas to the energy recovery equipment.

Landfill Gas to Energy Plant

The landfill gas-to-energy plant consists of six (6) Caterpillar 3516 engine/generator sets, each with a maximum power output of 1,148 bhp. Each engine combusts approximately 330 cubic feet of landfill gas per minute. The plant combusts approximately 2.8 million cubic feet of landfill gas per day while producing 4.8 Megawatts of electrical power.

The Caterpillar 3516 engines are turbo-charged, after cooled, and of 'lean burn' design. Each engine is capable of consuming approximately 415,000 standard cubic feet of landfill gas per day, or 10.1 million Btu's higher heating value (HHV) per hour. Each engine generates approximately 800 KW of electrical power. The power is transformed and delivered to the local grid.

Landfill gas is extracted from the wellfield via fuel gas compressor, which compresses the gas up to the working pressure required by the engines. After the gas has been compressed, it is cooled in an air-exchange cooler and filtered in a process filter in order to reduce the amount of water vapor present. After liquids and other impurities have been removed, the compressed gas is reheated to above its dew point to prevent condensation in the piping or engine fuel systems.

The gas is then delivered to the engines for use as fuel. The final "end product" in the process is the combustion of landfill gas, and the production of electrical power. The engines are operated in a continuous mode, with infrequent downtime for maintenance or repairs. By-products of combustion: (CO, NOx, SO2, VOC, NMOC and PM) are directed through exhaust stacks (one per engine). The stack height for each installation is 29.0 feet above grade, and the stack diameter is 10 inches.

An oil mist (particulates/VOC) is ducted from the crankcase of each engine through a vent, called the crankcase breather vent. This can be considered as an insignificant emissions source.

Enclosed Flare

A blower creates a vacuum on the header lines. Gas is ducted through the blower and into the flare unit. The discharge of the blower passes through a flow measurement port and a flame arrestor before exiting out the vertical stack. The gas is combusted at the base of the stack. Automatic louvers control the flow of oxygen to the flare, in order to regulate combustion temperature.

Air emissions from the enclosed flare include nitrogen dioxide (NOx), sulfur dioxide (Sox), carbon monoxide (CO), VOC, NMOC, HAPs, and particulate matter. The flare may be operated continuously once the landfill produces more gas than the gas to energy plant can manage. The maximum design capacity of the enclosed flare is 4,250 scfm.

Open (Candle) Flare

An open flare is available to combust the landfill gas not otherwise utilized by the engines or the enclosed flare. The open flare has a maximum design capacity of 3,400 scfm. The blower supplies the necessary pressure and momentum to supply landfill gas to the open flare when it is needed. For the open flare, the gas is combusted at the tip of the flare stack.

Air emissions from the open flare include nitrogen oxides (NOx), sulfur dioxide (SO2), carbon monoxide (CO), VOC, NMOC, HAPs, and particulate matter. The flare can be operated in a continuous mode, with infrequent downtime for blower maintenance, flame arrestor cleaning, etc.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit has been conducted. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION

EG1 to EG6	The Caterpillar Model 3516 engine/generators (six units)
F001	Waukesha VSG Engine Model F11G – emergency generator
P001A	Power Strategies Tornado (Parnell) Candlestick flare
P001	Tornado Enclosed Flare Model EV-4250
LFO-1	Landfill operations

EMISSIONS INVENTORY

Actual emission estimates for 2006 were provided by USA Waste of Virginia Landfills, as part of the application for the Title V Operating permit renewal. Emission levels are expected to increase over time as the landfill grows the waste in place.

2006 Criteria Pollutant Emissions in Tons/Year						
Emission Unit	VOC	CO	SO2	PM10	NOx	TNMOC
Landfill Operations	17.9			22.7		45.9
Combustion Equipment	0.4	38.6	4.7	4.4	23.7	9.2
Totals	18.3	38.6	4.7	27.1	23.7	55.1

2006 Facility Hazardous Air Pollutant Emissions

Pollutant	2006 Hazardous Air Pollutant Emissions in Tons/Yr
Hydrogen Chloride	1.9
Hydrogen Fluoride	1.0
Total HAP Emissions	2.9

EMISSION UNIT APPLICABLE REQUIREMENTS - [emission units LFO-1, P001, P001A, F001 and EG1 – EG6]

Limitations

The following limitations are derived from Conditions 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14 and 15 of the July 25, 2006 State Major NSR permit issued to USA Waste of Virginia Landfills.

Condition 2 –control of NMOC emissions from the landfill
Condition 3 – control efficiency of the enclosed flare with respect to NMOC emissions.
Condition 4 – fugitive dust emissions.
Condition 7 – limiting the Waukesha emergency generator to 500 hours per year.
Condition 8 – limits the maximum throughput of landfill gas for the facility.
Condition 9 – establishes the approved fuels for all combustion equipment.
Condition 10 – landfill operation is subject to the NSPS, Subpart WWW.
Condition 11 – sets the Facility-wide emission limits.
Condition 12 – places emission limits on the six Caterpillar engines.
Condition 13 – places emission limits on the enclosed flare device.
Condition 14 – visible emission limits for combustion devices, less the open flare.
Condition 15 – visible emission limit for the open flare.

The following Virginia Administrative Codes that have specific emission requirements have been determined to be applicable:

< 9 VAC 5-50-80 "New/Modified source standard for Visible Emissions" – units may not emit greater than 20% opacity except for one six-minute period in any one hour of not more than 30% opacity (reference 40 CFR 60, Appendix A. Method 9).

< 9 VAC 5-50-20 "Facility and Control Equipment Maintenance or Malfunction" – at all times, the facility, including associated air pollution control equipment, must be maintained and operated in a manner consistent with air pollution control practices for minimizing emissions.

Periodic Monitoring
Required monitoring has been derived from Conditions 5, 6, 19 and 20 of the July 25, 2006 State Major NSR permit issued to USA Waste of Virginia Landfills.

Condition 5 – requirement to measure and monitor the landfill gas flow.
Condition 6 – monitoring of the two flares.
Condition 19 – Subpart WWW monitoring requirements; certification/operation/calibration.
Condition 20 – monitoring for NSPS compliance.

The monitoring and recordkeeping requirements listed in this permit have been drafted to meet Part 70 requirements and those contained in the 40 CFR 60.756. The estimated emissions from this landfill operation were calculated from the 'Landfill Gas Emission Model', accumulated amount of waste in-place, the flow and analysis of the LFG and the default emission factors from the AP-42, Section 2.4. Assumptions and default values that were prominent in these calculations are as follows:

< Facility emissions are based on the assumption that any efficient LFG collection system has a maximum capture of 75% on the landfill.

< The VOC emissions assumed a default value equal to 39% of the generated NMOC content of the landfill gas flow that is calculated or found by stack test results.

Testing
Condition 18 of the State Major NSR permit describes the periodic testing requirements for the Caterpillar engine generators.

Recordkeeping
The permit includes requirements for maintaining records of all monitoring and testing required by the permit. These records include the annual consumption of landfill gas for the engines and other devices.

Condition 16 – requires records of landfill gas production, annual placement of Municipal Solid Waste in the landfill volume, tests of the destruction efficiency for the enclosed flare, NSPS monitoring data and the operating hours for the Waukesha emergency generator.

Reporting
All reports required by Subpart WWW (Section 60.755) and the Landfill MACT, Subpart AAAA shall be prepared and submitted to the Tidewater Regional Office in accordance with procedures outlined in Subpart WWW (Section 60.757) and the Landfill MACT, Subpart AAAA.

Streamlined Requirements
The permit does not contain any streamlining of permit requirements.

CHANGES TO THE TITLE V PERMIT

Based on a second look at the potential emissions from two emission units (tanks), it was decided to move the diesel storage tank, P003 and the leachate storage tank, P009 to the insignificant list from the page 5 list of significant emission units.

Condition III.A.15 references Condition numbers III.A.2, 12, 13 and III.C.1 & 2. The references have been changed to indicate III.A.2, 12, 13 and VII.C.1 & 2.

Condition III.A.16 references Condition numbers III.A.2, 3, 10, 12, 13, III.B.1, 2 and III.C.1 & 2. The references to III.B. 1 & 2, and III.C.1 & 2 were corrected to read; III.B.11 & 12, and VII.C1 & 2.

Condition III.D.4 had a reference to 40 CFR 60.18(f)(3), as a citation for the open flare exit velocity. This was changed to the correct citation of 40 CFR 60.18(f)(4). Also, a reference to 9 VAC 5-80-410 was changed to read 9 VAC 5-50-410.

Condition IV.A.4 listed a citation as 9 VAC 5-50-180 C, which was corrected to 9 VAC 5-20-180 C.

Section V. Insignificant Emissions Units list was updated to include the diesel storage tank and the leachate storage tank. The facility also listed additional insignificant units to be placed on the insignificant emissions unit list.

Section VI. Inapplicable Requirements list was expanded to include additional federal and state requirements that the facility indicated were not applicable to this facility.

Section VII. State-Only Enforceable Requirements: The citation for Toxic Pollutants was changed from 9 VAC 5, Chapter 50, Part II, Article 3: Standards of Performance for Toxic Pollutants (repealed section) to read: Article 5 (9 VAC 5-50-300 et. Seq.) of Part II of 9 VAC 5, Chapter 60.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110, that apply to all Federal operating permit sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions, including those caused by upset, within one business day.

B. Permit Expiration

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.1-20.01:2 and ɔ10.1-1185 of the *Code of Virginia,* and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

This general condition cites the entire Article(s) that follow:
B.2. Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Permits for Stationary Sources
B.3. Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Permits for Stationary Sources

This general condition cites the sections that follow:
B. 9 VAC 5-80-80. "Application"
B.2. 9 VAC 5-80-150. "Action on Permit Applications"
B.3. 9 VAC 5-80-80. "Application"
B.4. 9 VAC 5-80-80. "Application"
B.4. 9 VAC 5-80-140. "Permit Shield"
B.5. 9 VAC 5-80-80. "Application"

F. Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emissions reporting within 4 hours. Section 9 VAC 5-80-250 also requires malfunction reporting; however, reporting is required within 2 days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to this section including Title 5 facilities. Section 9 VAC 5-80-250 is from the Title 5 regulations. Title 5 facilities are subject to both Sections. A facility may make a single

report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within 4 day time business hours of the malfunction.

In order for emission units to be relieved from the requirement to make a written report in 14 days, the emission units must have continuous monitors and the continuous monitors must meet the requirements of 9 VAC 5-50-410 or 9 VAC 5-40-41.

This general condition cites the sections that follow:

F. 9 VAC 5-40-50. Notification, Records and Reporting
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F.2. 9 VAC 5-40-50. Notification, Records and Reporting
F.2. 9 VAC 5-50-50. Notification, Records and Reporting
F.3. 9 VAC 5-40-50. Notification, Records and Reporting
F.3. 9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources
F.3.a. 9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources

This general condition contains a citation from the Code of Federal Regulations as follows:
F.2.a. 40 CFR 60.13 (h). Monitoring Requirements.

U. Failure/Malfunction Reporting

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in section 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation, see the comments on general condition F.

This general condition cites the sections that follow:

U.2.d. 9 VAC 5-80-110. Permit Content
U.2.d. 9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction

STATE ONLY APPLICABLE REQUIREMENTS
The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

9 VAC 5 Chapter 50, Part II, Article 2: Standards of Performance for Odorous Emissions (Rule 5-2)

9 VAC 5 Chapter 60, Part II, Article 5: Standards of Performance for Toxic Pollutants (Rule 6-5)

FUTURE APPLICABLE REQUIREMENTS

The facility has not identified any of these requirements in the application. There are no other pending requirements for landfills evident in the literature.

INAPPLICABLE REQUIREMENTS

The facility has identified inapplicable requirements as follows:

Citation	Title of Citation	Description of Applicability
40 CFR 60, Subpart Kb	Volatile Organic Liquid Storage Vessels	The leachate storage tank has a vapor pressure below the threshold for this NSPS.
40 CFR 60, Subpart WWW	Landfill NSPS	Engines combusting 'treated' landfill gas are not subject to the NSPS testing, monitoring, recordkeeping and reporting requirements.
40 CFR 60, Subparts Cb – VVV, Subparts AAAA – HHHH and Subpart KKKK.	Multiple NSPS	The source categories cited in these regulations do not exist at the facility.
40 CFR 61, Subparts B – L, Subparts N – Z, and Subparts AA – FF.	Multiple NESHAPS	The source categories cited in these regulations do not exist at the facility.
40 CFR 63, Subpart AAAA	Landfill MACT	Recordkeeping and reporting requirements of the Landfill MACT do not apply to fuel burning units that combust 'treated' landfill gas (the Caterpillar engines).
40 CFR 63, Subpart ZZZZ	RICE MACT	The RICE MACT only applies to engines that are co-located at a major HAP source. The Bethel Landfill is not a major source for HAP emissions.
40 CFR 63, Subparts B – U, AA – ZZ, AAA – XXX, CCCC – YYYY, AAAAA – TTTTT and DDDDDD – NNNNNN.	Multiple MACTS	The source categories cited in these regulations do not exist at the facility.
40 CFR 64	Compliance Assurance Monitoring	The landfill is subject to an NSPS that was proposed after 11/15/1990. And therefore this regulation does not apply.
40 CFR 72	Acid Rain Regulations	The landfill gas to energy plant is not considered a "qualifying facility".

COMPLIANCE PLAN

The source does not have the requirement of a compliance plan.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation	Pollutant(s) Emitted (9 VAC 5-80-720 B)	Rated Capacity (9 VAC 5-80-720 C)

P003	Diesel Fuel Storage Tank	9 VAC 5-80-720 B	VOC	10,000 gallons
P004	Gasoline Storage Tank	9 VAC 5-80-720 B	VOC	200 gallons
P006	Hydraulic Fluid Storage Tank	9 VAC 5-80-720 B	VOC	350 gallons
P007	Transmission Fluid Storage Tank	9 VAC 5-80-720 B	VOC	550 gallons
P009	Leachate Storage Tank	9 VAC 5-80-720 B	VOC	120,000 gallons
P010	Used Oil Tank	9 VAC 5-80-720 B	VOC	500 gallons
P011	Diesel Fuel Tank	9 VAC 5-80-720 B	VOC	550 gallons
P012	Motor Oil	9 VAC 5-80-720 B	VOC	350 gallons
P013	Transmission Oil	9 VAC 5-80-720 B	VOC	350 gallons
F003	Diesel Emergency Generator	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	500 Watts
F004	Gasoline Emergency Generator	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	0.67 HP
F005	Emergency Scale house Diesel Generator	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	6.5 KW
F006	Emergency Scale house Diesel Generator (outbound)	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	6.5 KW
F007	Emergency Leachate Area Diesel Generator	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	50 KW
F008	Emergency Welder/Shop Gasoline Generator	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	3 KW
F009	Emergency Light Plant Gasoline Generator	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	6 KW
F010	Propane Comfort Heater	9 VAC 5-80-720 C	CO, VOC, NOx, SO2 and PM10	0.016 MMBtu/hour
T1 – T6	Engine Oil Day Tanks	9 VAC 5-80-720B	VOC	25 gallons
T7	Engine Oil Tank	9 VAC 5-80-720B	VOC	1500 gallons
T8	Used Oil Tank	9 VAC 5-80-720B	VOC	1500 gallons
T9	Engine coolant (propylene glycol)	9 VAC 5-80-720B	VOC	750 gallons
CBV-1	Crankcase Breather Vent	9 VAC 5-80-720C	PM10	N/A

[1]The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

CONFIDENTIAL INFORMATION

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

PUBLIC PARTICIPATION

The proposed permit will be placed on public notice in The Virginian Pilot from February 17, 2008 to March 18, 2008.